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HOGAN & HARTSON LLP
ONE TABOR CENTER, SUITE 1500
1200 SEVENTEENTH ST
DENVER, CO 80202

EXAMINER	
PARKER, JEFFREY ALAN	

ART UNIT	PAPER NUMBER
4147	

NOTIFICATION DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patentcolorado@hhlaw.com

Office Action Summary	Application No.	Applicant(s)	
	10/584,503	VAN DER TUIJN ET AL.	
	Examiner	Art Unit	
	JEFFREY PARKER	4147	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 22 June 2006.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-11* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-11* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 22 June 2006 is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *06/22/2006*.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.83(a) because they fail to show "curve 16" as described in the specification in paragraph [0034]. Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

2. Claims 1-11 are objected to because of the following informalities: Independent claims 1 and 8 recite “adaptative” which is not a word. It is suggested that Applicant replace “adaptative” with “adaptive.” Claims 2-7 and 9-11 are objected to as dependent upon Claims 1 and 8. Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1, 8, 10, and 11 are rejected under 35 U.S.C. 102(b) as being anticipated by **U.S. Publication 2003/0081697 to Little**.

As per claims 1 and 8, Little discloses a method/system of generating an adaptative slicer threshold from a received demodulated signal (**Abstract:** “An adaptive slicer threshold generation system includes a first moving average filter to determine a first average value of a first binary signal”), the method comprising the steps of: detecting a maximum value of the signal over a predetermined period, for at least two periods (**First moving average filter 410; paragraph [0026]:** “The first moving average filter 410 averages binary ones 110 (see FIG. 1 and FIG. 2) that the adaptive slicer threshold generation system 400 receives.”), and detecting a minimum value of the signal over a predetermined period, for at least two periods (**Second moving average filter 420; paragraph [0027]:** “The second moving average filter 40 averages binary

zeros 120 (see FIG. 1 and FIG. 2) that the adaptive slicer threshold generation system 400 receives."), wherein the method comprises the steps of: averaging several detected maximum values and averaging several detected minimum values (**paragraph [0026]:** "The first delay element 405 and the combiner 415 each receive the binary signal, v.sub.in(n). The combiner 415 combines a delayed binary signal, v(n-1), which has passed through the first delay element 405, with the received binary signal, v.sub.in(n), and preferably a leakage signal, v.sub.L(n-1)."), and calculating the slicer threshold from these average minimum and maximum values (**paragraph [0039]:** "The combiner 430 combines the minimum value of the binary one and the maximum value of the binary zero to generate a combined output. The gain element 440 preferably sets a value of a slicer threshold 140 within a data eye 100, 200.").

4. As per claim 10, Little discloses the system according to claim 8, wherein the first and/or second detectors are a maximum peak detector (**paragraph [0035]:** "The peak detector 520 receives a binary signal to determine a maximum value of a binary zero") and a minimum peak detector, respectively (**paragraph [0031]:** "The minimum detector 510 receives a binary signal to determine a minimum value of a binary one.").

5. As per claim 11, Little discloses the system according to claim 8, wherein the system comprises a bit level detector associated with said at least one memory in order to activate the storage of a new minimum or maximum value only if a bit level change has been detected (minimum value - **paragraph [0032]:** "If the received binary signal, v.sub.in(n), of the minimum comparator 505 of the minimum detector 510 is less than the delayed output signal, v.sub.out(n-1), of the minimum comparator 505 that has

passed through both the combiner 515 and the delay element 535, then the minimum comparator 505 outputs the received binary signal, v.sub.in(n), of the minimum comparator 505. Thus, the output signal, v.sub.out(n), of the minimum comparator 505 substantially equals the received binary signal, v.sub.in(n), of the minimum comparator 505. In this case, the received binary signal, v.sub.in(n), of the minimum comparator 505 is preferably stored in a storage element that may be coupled to the output node of the minimum comparator 505. Storage of the received binary signal, v.sub.in(n), of the minimum comparator 505 occurs when the minimum comparator 505 outputs the output signal, v.sub.out(n), that substantially equals the received binary signal, v.sub.in(n), of the minimum comparator 505. The storage element may be the combiner 515; however, any other suitable device may be used."; similarly for maximum value, see **paragraph [0036]**).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.

4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. Claims 2-4 and 9 rejected under 35 U.S.C. 103(a) as being unpatentable over **U.S. Publication 2003/0081697 to Little** in view of **U.S. Patent 4,709,274 to Tanioka**.

As per claim 2, Little discloses the method according to claim 1, wherein the averages of the maximum and minimum values are calculated using a running average over the n last successive detected maximum or minimum values, n being a **…** integer greater than 1 (maximum average - **paragraph [0026]:** “The first moving average filter 410 averages binary ones 110 (see FIG. 1 and FIG. 2) that the adaptive slicer threshold generation system 400 receives. The first moving average filter 410 preferably includes a first delay element 405, a combiner 415, a gain element 435, and a second delay element 445. The first delay element 405 and the combiner 415 each receive the binary signal, v.sub.in(n). The combiner 415 combines a delayed binary signal, v(n-1), which has passed through the first delay element 405, with the received binary signal, v.sub.in(n), and preferably a leakage signal, v.sub.L(n-1). The leakage signal, v.sub.L(n-1), is a sample of the output signal, v.sub.out(n), of the combiner 415 that has passed through both the gain element 435 and the second delay element 445. The output signal, v.sub.out(n), of the combiner 415 preferably is stored in a storage element.”; similarly for minimum average, see **paragraph [0027]**). Little does not teach N being a predetermined integer greater than 1.

However, Tanioka teaches N being a predetermined integer greater than 1 (**column 20, lines 51-66:** “In general, it is considered that the slice level for pel density signal binarization is preferably selected to be 1/2(DAmax+DAmin). However, the

values of DAmax and DAmin are those based on the image area having a size of 1/16 mm.times.1 mm, and it is not always suitable to select a slice level based only on the values of DAmax and DAmin. Furthermore, as in a conventional apparatus, when a slice level is determined by prescan, if the background is discriminated by visual observation, the average value of pel densities within a relatively wide range is calculated. In the apparatus of the present application, although the basic operation is a sequential operation type, the incorporation of a CPU allows averaging of the image area for a wider range of image by adding previous data to the new pel density average data for 4 main scans."; Tanioka teaches 4 repetitions for the running average used to calculated a slice level).

It would have been obvious to one of ordinary skill in the art at the time of the invention to recognize the application of the predetermined integer of Tanioka to the running average of Little modified so that the running average only calculates the previous 4 samples.

7. As per claim 3, Little and Tanioka teach the method according to claim 2. Tanioka teaches wherein n ranges from 2 to 6 (**column 20, lines 51-66:** "In general, it is considered that the slice level for pel density signal binarization is preferably selected to be 1/2(DAmax+DAmin). However, the values of DAmax and DAmin are those based on the image area having a size of 1/16 mm.times.1 mm, and it is not always suitable to select a slice level based only on the values of DAmax and DAmin. Furthermore, as in a conventional apparatus, when a slice level is determined by prescan, if the background is discriminated by visual observation, the average value of pel densities within a

relatively wide range is calculated. In the apparatus of the present application, although the basic operation is a sequential operation type, the incorporation of a CPU allows averaging of the image area for a wider range of image by adding previous data to the new pel density average data for 4 main scans.").

8. As per claim 4, Little and Tanioka teach the method according to claim 3. Tanioka teaches wherein n is equal to 4 (**column 20, lines 51-66:** "In general, it is considered that the slice level for pel density signal binarization is preferably selected to be 1/2(DAmax+DAmin). However, the values of DAmax and DAmin are those based on the image area having a size of 1/16 mm.times.1 mm, and it is not always suitable to select a slice level based only on the values of DAmax and DAmin. Furthermore, as in a conventional apparatus, when a slice level is determined by prescan, if the background is discriminated by visual observation, the average value of pel densities within a relatively wide range is calculated. In the apparatus of the present application, although the basic operation is a sequential operation type, the incorporation of a CPU allows averaging of the image area for a wider range of image by adding previous data to the new pel density average data for 4 main scans.").

9. As per claim 9, Little teaches the system according to claim 8, wherein it further comprises at least one **…** memory to store said several maximum values and said several minimum values to be averaged (maximum values - **paragraph [0026]:** "The first delay element 405 and the combiner 415 each receive the binary signal, v.sub.in(n)… The output signal, v.sub.out(n), of the combiner 415 preferably is stored in a storage element. The storage element may be the combiner 415; however, any other

suitable device may be used."; similarly for minimum value, see **paragraph [0027]**). Little does not teach wherein it further comprises at least one FIFO memory.

However, Tanioka teaches wherein it further comprises at least one FIFO memory (**column 22, lines 8-15:** "In step S10, the slice level Ln+1 for the (n+1)st pel block is calculated in accordance with the equation (2) based on the slice level Ln for the nth pel block, DAmax.sub.n, DAmin.sub.n, and the number N of blocks to be considered. In steps S11 and S12, the calculated slice level Ln+1 is shifted in a register now storing the slice level Ln, and is supplied to a comparator 112.")

10. Claims 5-7 rejected under 35 U.S.C. 103(a) as being unpatentable over **U.S. Publication 2003/0081697 to Little** in view of **U.S. Patent 1,566,169 to Lavrenov**.

As per claim 5, Little teaches the method according to claim 1, wherein the step of detecting a maximum value comprises the operations of: detecting a maximum peak of the signal during the predetermined period (**First moving average filter 410; paragraph [0026]:** "The first moving average filter 410 averages binary ones 110 (see FIG. 1 and FIG. 2) that the adaptive slicer threshold generation system 400 receives."), **…** , and holding the value of the detected maximum peak as the maximum value over the predetermined period (**paragraph [0026]:** "The first delay element 405 and the combiner 415 each receive the binary signal, v.sub.in(n)… The output signal, v.sub.out(n), of the combiner 415 preferably is stored in a storage element. The storage element may be the combiner 415; however, any other suitable device may be used."). Little does not teach the maximum signal peak corresponding to a point where the

signal first-order derivative is zero and the signal second-order derivative has a negative value.

However, Lavrenov teaches the maximum signal peak corresponding to a point where the signal first-order derivative is zero and the signal second-order derivative has a negative value (**Fig. 2; page 5, lines 24-31:** "As this takes place, the second order derivative changes from positive to negative at the point corresponding to the maximum value of the first derivative. When the first order derivative reaches zero (region C), the stage of complete charging is indicated and the storage battery is disconnected from the charging current supply means.").

It would have been obvious to one of ordinary skill in the art at the time of the invention to recognize the application of the signal maximum locating technique of Lavrenov to the slice threshold detector of Little modified so that the maximum of each "1" bit can be detected accurately by the slice detector.

11. As per claim 6, the method according to claim 1, wherein the step of determining the minimum value comprises the operations of: detecting a minimum peak of the signal during the predetermined period (**Second moving average filter 420; paragraph [0027]:** "The second moving average filter 40 averages binary zeros 120 (see FIG. 1 and FIG. 2) that the adaptive slicer threshold generation system 400 receives."), **…** , and holding the value of the detected minimum peak as the minimum value over the predetermined period (**paragraph [0027]:** "The first delay element 455 and the combiner 465 each receive the binary signal, v.sub.in(n)… The output signal, v.sub.out(n), of the combiner 465 preferably is stored in a storage element. The storage

element may be the combiner 465; however, any other suitable device may be used.”). Little does not teach the minimum signal peak corresponding to a point where the signal first-order derivative is zero and where the signal second-order derivative has a positive value.

However, Lavrenov teaches the minimum signal peak corresponding to a point where the signal first-order derivative is zero and where the signal second-order derivative has a positive value (**Fig. 2; page 5, lines 24-31:** “As this takes place, the second order derivative changes from positive to negative at the point corresponding to the maximum value of the first derivative. When the first order derivative reaches zero (region C), the stage of complete charging is indicated and the storage battery is disconnected from the charging current supply means.”; One of ordinary skill in the art would appreciate that to find the minimum rather than the maximum, the first order derivative would also be zero and the second order derivative would change from negative to positive).

12. As per claim 7, Little and Lavrenov teach the method according to claim 5. Little further teaches wherein a new detected maximum value is used to calculate the average maximum value only if a minimum peak has been detected during the previous predetermined period (**paragraph [0036]:** “If the received binary signal, v.sub.in(n), of the peak comparator 555 of the peak detector 520 is more than the delayed output signal, v.sub.out(n-1), of the peak comparator 555 that has passed through both the combiner 565 and the delay element 585, then the peak comparator 555 outputs the received binary signal, v.sub.in(n), of the peak comparator 555.”), and a new detected

minimum value is used to calculate the average minimum value only if a maximum peak has been detected during the previous predetermined period (**paragraph [0032]:** "If the received binary signal, v.sub.in(n), of the minimum comparator 505 of the minimum detector 510 is less than the delayed output signal, v.sub.out(n-1), of the minimum comparator 505 that has passed through both the combiner 515 and the delay element 535, then the minimum comparator 505 outputs the received binary signal, v.sub.in(n), of the minimum comparator 505.").

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: US Patent 6,735,260 to Eliezer et al.. Eliezer et al. discloses a similar adaptive slicer technique.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JEFFREY PARKER whose telephone number is (571)270-5161. The examiner can normally be reached on M-T 7:30-5:00, every other Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Pankaj Kumar can be reached on 5712723011. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/JAP/

/GEORGE BUGG/

Primary Examiner, Art Unit 4147